

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Claims Listing

1. (currently amended) A method for inducing melanogenesis in a human subject having an α-melanocortin 1 receptors (MC1R) MC1R variant allele associated with loss of or diminished receptor function, which comprises the steps step of administering to said subject an amount of an α-MSH analogue [Nle⁴, D⁷Phe]-α-melanocyte stimulating hormone ([Nle⁴, D⁷Phe]-αMSH) effective to induce melanogenesis by the melanocytes in the skin or other epidermal tissue of the subject; wherein the MC1R variant is identified using primer sequences selected from 5'-tggacaggactatggctgtg-3' (MC1R-1F – SEQ ID NO:1), 5'-tcttcagcacgctttcat-3' (MC1R-1R – SEQ ID NO: 2), 5'-cttctacgcactgcgctacc-3' (MC1R-2F – SEQ ID NO: 3) and 5'-gcttaagtgtgctggcag-3' (MC1R-2R – SEQ ID NO: 4).

2. (currently amended) The method of claim 1, wherein an admixture of said α-MSH analogue with a further α-MSH analogue is administered in an amount effective to induce said melanogenesis, wherein said further α-MSH analogue is selected from:

(a) compounds of the formula:

Ac-Ser-Tyr-Ser-M-Gln-His-D-Phe-Arg-Trp-Gly-Lys-Pro-Val-NH₂

wherein M is Met, Nle or Lys; and

(b) compounds of the formula:

R₁-W-X-Y-Z-R₂

wherein

R₁ is Ac-Gly-, Ac-Met-Glu, Ac-Nle-Glu-, or Ac-Tyr-Glu-;

W is -His- or -D-His-;

X is -Phe-, -D-Phe-, -Tyr-, -D-Tyr-, or -(pNO₂)D-Phe⁷-;

Y is -Arg- or -D-Arg-;
Z is -Trp- or-D-Trp-; and
R₂ is -NH₂; -Gly-NH₂; or -Gly-Lys-NH₂.

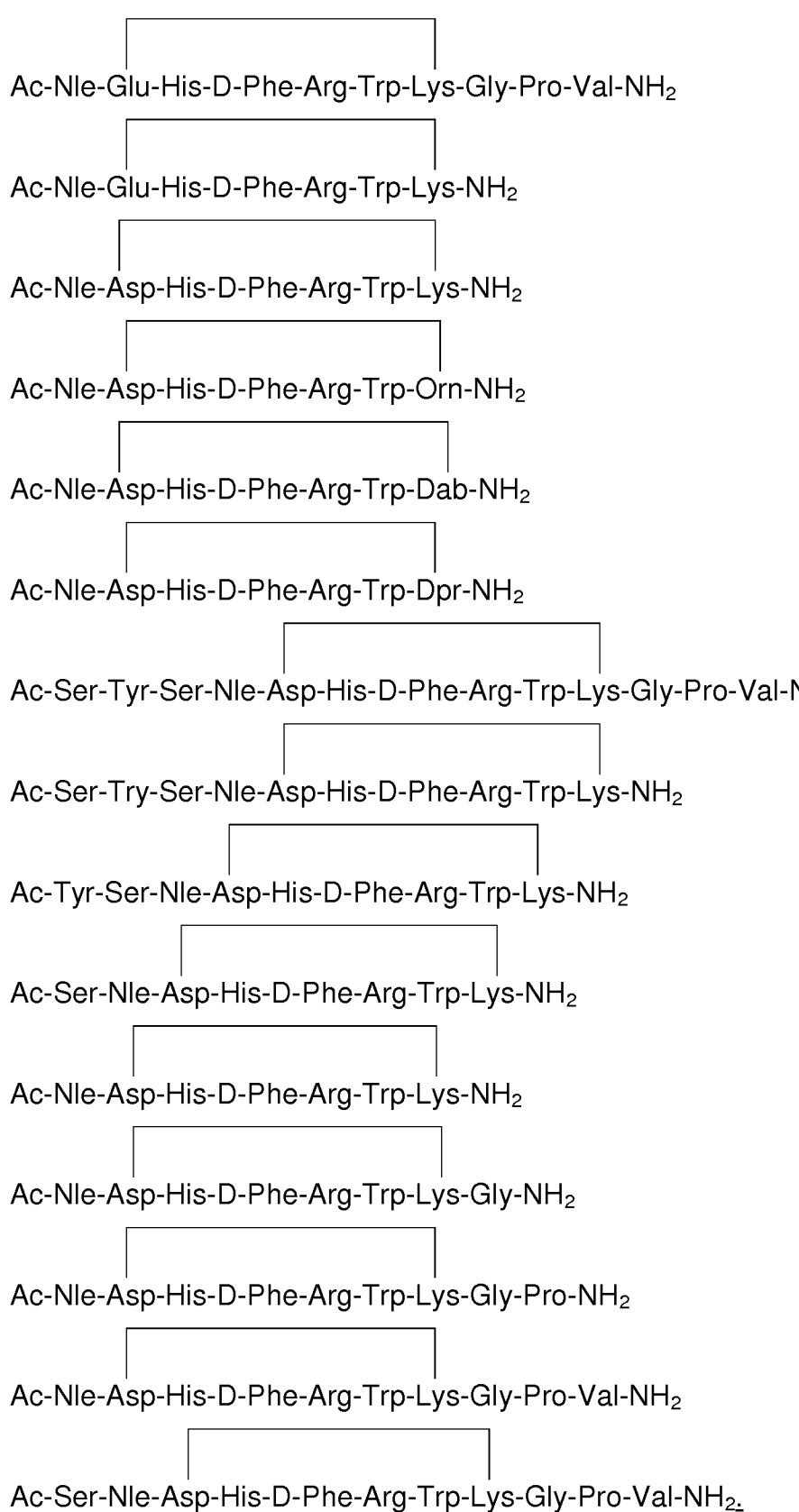
3. (withdrawn, currently amended) The method of claim 1, wherein the further α-MSH analogue is a cyclic analogue wherein an intramolecular interaction exists (1) between the amino acid residue at position 4 and an amino acid residue at position 10 or 11, and/or (2) between the amino acid residue at position 5 and the amino acid residue at position 10 or 11.

4. (withdrawn, original) The method of claim 3, wherein the intramolecular interaction is a disulfide bond or other covalent bond.

5. (currently amended) The method of claim 1, wherein the further α-MSH analogue is selected from the group consisting of:

Ac-Ser-Tyr-Ser-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂
Ac-Ser-Tyr-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH₂
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Gly-NH₂
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-NH₂
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH₂
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Orn-NH₂
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Orn-NH₂
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Dab-NH₂
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Dab-NH₂
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Dpr-NH₂
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-NH₂ (SEQ ID NO:5)
Ac-Nle-Asp-His-Phe-Arg-Trp-Lys-NH₂ (SEQ ID NO:6).

6. (withdrawn, currently amended) The method of claim 1, wherein the further α-MSH analogue is selected from the group consisting of:



7. (currently amended) The method of claim 1, wherein the further α -MSH analogue is

[D-Phe⁷]- α -MSH,
[Nle⁴, D-Phe⁷]- α -MSH,
[D-Ser¹, D-Phe⁷]- α -MSH,
[D-Tyr², D-Phe⁷]- α -MSH,
[D-Ser³, D-Phe⁷]- α -MSH,
[D-Met⁴, D-Phe⁷]- α -MSH,
[D-Glu⁵, D-Phe⁷]- α -MSH,
[D-His⁶, D-Phe⁷]- α -MSH,
[D-Phe⁷, D-Arg⁸]- α -MSH,
[D-Phe⁷, D-Trp⁹]- α -MSH,
[D-Phe⁷, D-Lys¹¹]- α -MSH,
[D-Phe⁷, D-Pro¹²]- α -MSH,
[D-Phe⁷, D-Val¹³]- α -MSH,

[D-Ser¹, Nle⁴, D-Phe⁷]- α -MSH,
[D-Tyr², Nle⁴, D-Phe⁷]- α -MSH,
[D-Ser³, Nle⁴, D-Phe⁷]- α -MSH,
[Nle⁴, D-Glu⁵, D-Phe⁷]- α -MSH,
[Nle⁴, D-His⁶, D-Phe⁷]- α -MSH,
[Nle⁴, D-Phe⁷, D-Arg⁸]- α -MSH,
[Nle⁴, D-Phe⁷, D-Trp⁹]- α -MSH,
[Nle⁴, D-Phe⁷, ~~D-LYS¹¹~~ D-Lys¹¹]- α -MSH,
[Nle⁴, D-Phe⁷, D-Pro¹²]- α -MSH,
[Nle⁴, D-Phe⁷, D-Val¹³]- α -MSH,

[Cys⁴, Cys¹⁰]- α -MSH,
[Cys⁴, D-Phe⁷, Cys¹⁰]- α -MSH,

[Cys⁴, Cys¹¹]-α-MSH₁

[Cys⁵, Cys¹⁰]-α-MSH₁

[Cys⁵, Cys¹¹]-α-MSH₁

[Cys⁴, Cys¹⁰]-α-MSH₄₋₁₃₁

[Cys⁴, Cys¹⁰]-α-MSH₄₋₁₂₁

[Nle⁴, D-Phe⁷]-α-MSH₄₋₁₀,

[Nle⁴, D-Phe⁷]-α-MSH₄₋₁₁,

[D-Phe⁷]-α-MSH₅₋₁₁,

[Nle⁴, D-Tyr⁷]-α-MSH₄₋₁₁,

[(pNO₂)D-Phe⁷]-α-MSH₄₋₁₁,

[Tyr⁴, D-Phe⁷]-α-MSH₄₋₁₀,

[Tyr⁴, D-Phe⁷]-α-MSH₄₋₁₁,

[Nle⁴]-α-MSH₄₋₁₁,

[Nle⁴, (pNO₂)D-Phe⁷]-α-MSH₄₋₁₁,

[Nle⁴, D-His⁶]-α-MSH₄₋₁₁,

[Nle⁴, D-His⁶, D-Phe⁷]-α-MSH₄₋₁₁,

[Nle⁴, D-Arg⁸]-α-MSH₄₋₁₁,

[Nle⁴, D-Trp⁹]-α-MSH₄₋₁₁,

[Nle⁴, D-Phe⁷, D-Trp⁹]-α-MSH₄₋₁₁,

[Nle⁴, D-Phe⁷]-α-MSH₄₋₉, or

[Nle⁴, D-Phe⁷, D-Trp⁹]-α-MSH₄₋₉.

8. (currently amended) The method of claim 1, wherein the further α-MSH analogue is

[Nle⁴, D-Phe⁷] -α- MSH₄₋₁₀,
[Nle⁴, D-Phe⁷] -α- MSH₄₋₁₁,
[Nle⁴, D-Phe⁷], D-Trp⁹] -α- MSH₄₋₁₁, or
[Nle⁴, D-Phe⁷] -α- MSH₄₋₉.

9-11. (cancelled.)

12. (currently amended) A method according to claim 1 wherein the human subject has one or more variant alleles selected from the group consisting of Val60Leu (V60L), Asp84Glu (D84E), Val92Met (V92M), Arg142His (R142H), Arg 151Cys (R151C), Arg160Trp (R160W), and Asp194His Asp294His (D294H).

13. (currently amended) A method according to claim 1 wherein the human subject has two or more variant alleles selected from the group consisting of Val60Leu (V60L), Asp84Glu (D84E), Val92Met (V92M), Arg142His (R142H), Arg 151Cys (R151C), Arg160Trp (R160W), and Asp194His Asp294His (D294H).

14. (previously presented) A method according to claim 1 wherein the human subject has a Fitzpatrick skin type of I or II.

15. (cancelled)